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1 **Generalized Lempel-Ziv parsing scheme and its preliminary analysis (average profile**
Louchard, G.; Szpankowski, W.;
Data Compression Conference, 1995. DCC '95. Proceedings , 28-30 March 199!
Page(s): 262 -271

[Abstract]   [PDF Full-Text (424 KB)] **IEEE CNF**

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2 **Asymptotic behavior of the Lempel-Ziv parsing scheme and digital tre**
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Information Theory, 1995. Proceedings., 1995 IEEE International Symposium c
17-22 Sept. 1995
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[Abstract]   [PDF Full-Text (96 KB)] **IEEE CNF**

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3 **On the average redundancy rate of the Lempel-Ziv code with k-error protocol**
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Page(s): 373 -382

[Abstract]   [PDF Full-Text (100 KB)] **IEEE CNF**

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4 **Data compressor decompressor IC**
Shah, I.A.; Johnson, B.C.;
Circuits and Systems, 1990., IEEE International Symposium on , 1-3 May 199C
Page(s): 41 -44 vol.1

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5 **Average profile and limiting distribution for a phrase size in the Lemp parsing algorithm**
Louchard, G.; Szpankowski, W.;
Information Theory, IEEE Transactions on , Volume: 41 Issue: 2 , March 1995
Page(s): 478 -488

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6 **Fixed-slope universal lossy data compression**
En-hui Yang; Zhen Zhang; Berger, T.;
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7 **A pattern matching approach to image compression**
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Image Processing, 1996. Proceedings., International Conference on , Volume: :
16-19 Sept. 1996
Page(s): 349 -352 vol.2

[Abstract]   [PDF Full-Text (668 KB)] **IEEE CNF**

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8 **Pattern matching image compression**
Atallah, M.; Genin, Y.; Szpankowski, W.;
Data Compression Conference, 1996. DCC '96. Proceedings , 31 March-3 April
Page(s): 421

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9 **Pattern matching image compression: algorithmic and empirical resu**
Atallah, M.; Genin, Y.; Szpankowski, W.;
Pattern Analysis and Machine Intelligence, IEEE Transactions on , Volume: 21 I
, July 1999
Page(s): 614 -627

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10 **Average profile of the Lempel-Ziv scheme for a Markovian source**
Jing Tang; Szpanskowski, W.;
Information Theory. 1997. Proceedings., 1997 IEEE International Symposium c

June-4 July 1997
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11 **Software compression in the client/server environment**
Factor, M.; Sheinwald, D.; Yassour, B.-A.;
Data Compression Conference, 2001. Proceedings. DCC 2001. , 27-29 March 2
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Data compressor decompressor IC

Shah, I.A. Johnson, B.C.
North American Philips Corp., Briarcliff Manor, NY ;

This paper appears in: **Circuits and Systems, 1990., IEEE International Symposium on**
Meeting Date: 05/01/1990 -05/03/1990
Publication Date: 1-3 May 1990
Location: New Orleans, LA , USA
On page(s): 41-44 vol.1
References Cited: 3
INSPEC Accession Number: 3832467

Abstract:
The data compressor decompressor (DCD) IC, a VLSI implementation of a ve of the Lempel-Ziv (L-Z) compression algorithm, is discussed. The IC is suitab high-speed, lossless compression of digital data such as text and images. The single-pass lossless compression scheme adapts to the statistics of the data t processed. The authors outline the L-Z compression method, illustrate a solut its search requirement, and discuss the chip architecture and features

Index Terms:
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Saumya Debray , William Evans
ACM SIGPLAN Notices , Proceedings of the ACM SIGPLAN 2002 Conference on Programming language design and implementation May 2002
Volume 37 Issue 5
As computers are increasingly used in contexts where the amount of available memory is limited, it becomes important to devise techniques that reduce the memory footprint of application programs while leaving them in an executable form. This paper describes an approach to applying data compression techniques to reduce the size of infrequently executed portions of a program. The compressed code is decompressed dynamically (via software) if needed, prior to execution. The use of data compression t ...

2   Query optimization in compressed database systems   100%
Zhiyuan Chen , Johannes Gehrke , Flip Korn
ACM SIGMOD Record , Proceedings of the 2001 ACM SIGMOD international conference on Management of data May 2001
Volume 30 Issue 2

Over the last decades, improvements in CPU speed have outpaced improvements in main memory and disk access rates by orders of magnitude, enabling the use of data compression techniques to improve the performance of database systems. Previous work describes the benefits of compression for numerical attributes, where data is stored in compressed format on disk. Despite the abundance of string-valued attributes in relational schemas there is little

work on compression for string attributes in a ...

3   Tool support for architectural decisions in embedded systems: CoCo: a hardware/software   100%
    platform for rapid prototyping of code compression technologies
Haris Lekatsas , Jörg Henkel , Srimat Chakradhar , Venkata Jakkula , Murugan Sankaradass .
Proceedings of the 40th conference on Design automation June 2003
In recent years instruction code compression/decompression technologies have emerged as an efficient way to a) reduce the memory usage of an embedded system, b) to improve performance through effectively higher bandwidths and/or to c) reduce the overall power consumption of a system processing compressed code. We have presented efficient code compression/decompression techniques and architectures in the past. For the commercialization phase, we designed a novel hardware/software code compression ...

4   Parallel algorithms for data compression   100%
    M. E. Gonzalez Smith , J. A. Storer
Journal of the ACM (JACM) April 1985
Volume 32 Issue 2
Parallel algorithms for data compression by textual substitution that are suitable for VLSI implementation are studied. Both “static” and “dynamic” dictionary schemes are considered.

5   SAMC - efficient semi-adaptive data compression   100%
    Edward Hatton
Proceedings of the 1995 conference of the Centre for Advanced Studies on Collaborative research November 1995
Universal noiseless coding is of considerable interest to industry for the purposes of data reduction in order to store or transmit large volumes of typically textual data. Compression schemes have evolved from simple memoryless Huffman coding, to the Lempel-Ziv family of dictionary compression, to the current Markov or statistical modelling. This evolution has resulted in successively better compression, at an increased cost of execution time and RAM requirements. Bell, Cleary, and Moffat's Mar ...

6   Data compression   99%
    Debra A. Lelewer , Daniel S. Hirschberg
ACM Computing Surveys (CSUR) September 1987
Volume 19 Issue 3
This paper surveys a variety of data compression methods spanning almost 40 years of research, from the work of Shannon, Fano, and Huffman in the late 1940s to a technique developed in 1986. The aim of data compression is to reduce redundancy in stored or communicated data, thus increasing effective data density. Data compression has important application in the areas of file storage and distributed systems. Concepts from information theory as they relate to the goals and evaluation of data ...

7   Dictionary-based order-preserving string compression   99%
    Gennady Antoshenkov
The VLDB Journal — The International Journal on Very Large Data Bases February 1997

Volume 6 Issue 1

As no database exists without indexes, no index implementation exists without order-preserving key compression, in particular, without prefix and tail compression. However, despite the great potentials of making indexes smaller and faster, application of general compression methods to ordered data sets has advanced very little. This paper demonstrates that the fast dictionary-based methods can be applied to order-preserving compression almost with the same freedom as in the general case. The pro ...

8 Modeling for text compression   98%

Timothy Bell , Ian H. Witten , John G. Cleary

ACM Computing Surveys (CSUR) December 1989

Volume 21 Issue 4

The best schemes for text compression use large models to help them predict which characters will come next. The actual next characters are coded with respect to the prediction, resulting in compression of information. Models are best formed adaptively, based on the text seen so far. This paper surveys successful strategies for adaptive modeling that are suitable for use in practical text compression systems. The strategies fall into three main classes: finite-context modeling, i ...

9 XML indexing and compression: XPRESS: a queriable compression for XML data   97%

Jun-Ki Min , Myung-Jae Park , Chin-Wan Chung

Proceedings of the 2003 ACM SIGMOD international conference on on Management of data June 2003

Like HTML, many XML documents are resident on native file systems. Since XML data is irregular and verbose, the disk space and the network bandwidth are wasted. To overcome the verbosity problem, the research on compressors for XML data has been conducted. However, some XML compressors do not support querying compressed data, while other XML compressors which support querying compressed data blindly encode tags and data values using predefined encoding methods. Thus, the query performance on com ...

10 The performance advantage of applying compression to the memory system   96%

Nihar R. Mahapatra , Jiangjiang Liu , Krishnan Sundaresan

ACM SIGPLAN Notices , Proceedings of the workshop on Memory system performance June 2002

Volume 38 Issue 2 supplement

The memory system stores information comprising primarily instructions and data and secondarily address information, such as cache tag fields. It interacts with the processor by supporting related traffic (again comprising addresses, instructions, and data). Continuing exponential growth in processor performance, combined with technology, architecture, and application trends, place enormous demands on the memory system to permit this information storage and exchange at a high-enough performance ...

11 Hardware-Assisted Data Compression for Energy Minimization in Systems with Embedded   95%
Processors

L. Benini , D. Bruni , A. Macii , E. Macii

Proceedings of the conference on Design, automation and test in Europe March 2002

In this paper, we suggest hardware-assisted data compressionas a tool for reducing energy consumption of core-based embed-ded systems. We propose a novel and efficient

architecture foron-the-fly data compression and decompression whose field ofoperation is the cache-to-memory path. Uncompressed cachelines are compressed before they are written back to main mem-ory, and decompressed when cache refills take place.We explore two classes of compression methods, profile-drivenand differential, since ...

12 Optimal VLSI circuits for sorting   95%
Richard Cole , Alan Siegel
Journal of the ACM (JACM) October 1988
Volume 35 Issue 4
This work describes a large number of constructions for sorting N integers in the range [0, M - 1], for N ≤ M ≤ N2, for the standard VLSI bit model. Among other results, we attain: VLSI sorter constructions that are within a constant factor of optimal size, for all M and almost all running times T. a ...

13 A very fast algorithm for RAM compression   93%
Luigi Rizzo
ACM SIGOPS Operating Systems Review April 1997
Volume 31 Issue 2
Compressed virtual memory systems have been suggested, and in some cases implemented, to improve the effectiveness of use of physical RAM. However, most proposals and/or implementations are based on adaptive compression algorithms which achieve good compression ratios, but are slow compared to a local disk. Hence, they can only give some advantage with very slow (e.g. network-mounted) swap devices. In this paper we show that in many cases memory pages contain highly compressible data, with a ver ...

14 LeZi-update: an information-theoretic framework for personal mobility tracking in PCS   87%
networks
Amiya Bhattacharya , Sajal K. Das
Wireless Networks March 2002
Volume 8 Issue 2/3
The complexity of the mobility tracking problem in a cellular environment has been characterized under an information-theoretic framework. Shannon's entropy measure is identified as a basis for comparing user mobility models. By building and maintaining a dictionary of individual user's *path* updates (as opposed to the widely used location updates), the proposed adaptive on-line algorithm can learn subscribers' profiles. This technique evolves out of the concepts of lossless compression. T ...

15 A scheme for data compression in supercomputers   87%
M. A. Bassiouni , N. Ranganathan , A. Mukherjee
Proceedings of the 1988 ACM/IEEE conference on Supercomputing November 1988
There is a growing recognition of the importance of efficient coding and data compression schemes in supercomputing centers and in networks of high-speed computing machines. Recently, there has been a considerable interest in arithmetic coding as a promising technique for reducing the cost of data storage and transmission. In this paper, we present a compression algorithm that is tailored to utilize the enormous speed and memory size of supercomputers and which utilizes an enhanced ...

16 LeZi-update: an information-theoretic approach to track mobile users in PCS networks   87%
Amiya Bhattacharya , Sajal K. Das
Proceedings of the 5th annual ACM/IEEE international conference on Mobile computing and networking August 1999

17 Query evaluation techniques for large databases   83%
Goetz Graefe
ACM Computing Surveys (CSUR) June 1993
Volume 25 Issue 2
Database management systems will continue to manage large data volumes. Thus, efficient algorithms for accessing and manipulating large sets and sequences will be required to provide acceptable performance. The advent of object-oriented and extensible database systems will not solve this problem. On the contrary, modern data models exacerbate the problem: In order to manipulate large sets of complex objects as efficiently as today's database systems manipulate simple records, query-processi ...

18 Graded codes by G-sets   82%
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Tetsuya Higuchi , Nobuki Kajihara
Communications of the ACM April 1999
Volume 42 Issue 4

20 Optimizing methods: Data compression techniques for economic processing of large   82%
commercial files
James E. Mulford , Richard K. Ridall
Proceedings of the 1971 international ACM SIGIR conference on Information storage and retrieval April 1971
The application of compact coding, differencing and other techniques to indexed sequential files is discussed. The effects on system performance are discussed and reductions of almost 80% in mass storage requirements for a particular file are reported.

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21 Techniques for FPGA implementation of video compression systems   82%

Brian Schoner , John Villasenor , Steve Molloy , Rajeev Jain
Proceedings of the 1995 ACM third international symposium on Field-programmable gate arrays February 1995
Real-time video compression is a challenging subject for FPGA implementation because it typically has a large computational complexity and requires high data throughput. Previous implementations have used parallel banks of FPGAs or DSPs to meet these requirements. Using design techniques that maximize FPGA utilization, we have implemented two video compression systems, each of which uses a single FPGA. In this first system, algorithmic optimizations are made to create a low-complexity imple ...

22 Demonstration session 1: Clear face analysis from MPEG compressed video   80%

Ling-Yu Duan , Qi Tian
Proceedings of the tenth ACM international conference on Multimedia December 2002
In this demonstration, we present a system to analyze the clear degree of faces present in MPEG compressed video of Head-and-Shoulders style. The proposed system consists of three hierarchical modules: low-level features extraction, robust face tracking, and clear faces selection. We have integrated the core algorithm into an Automated Transaction Service (ATS) surveillance system. The Incremental Focus of Attention (IFA) architecture is taken to combine pixel domain processing with compressed d ...

23 Session P11: visualization systems and image-based visualization: Sea of images   80%

Daniel G. Aliaga , Thomas Funkhouser , Dimah Yanovsky , Ingrid Carlbom
Proceedings of the conference on Visualization '02 October 2002
A long-standing research problem in computer graphics is to reproduce the visual experience
of walking,through a large photorealistic environment interactively. On one hand, traditional
geometry-based rendering systems fall short of simulating the visual realism of a complex
environment. On the other hand, image-based rendering systems have to date been unable to
capture and store a sampled representation of a large environment with complex lighting and
visibility effects.In this paper, we prese ...

24 A survey on wavelet applications in data mining   77%
Tao Li , Qi Li , Shenghuo Zhu , Mitsunori Ogihara
ACM SIGKDD Explorations Newsletter December 2002
Volume 4 Issue 2
Recently there has been significant development in the use of wavelet methods in various data
mining processes. However, there has been written no comprehensive survey available on the
topic. The goal of this is paper to fill the void. First, the paper presents a high-level
data-mining framework that reduces the overall process into smaller components. Then
applications of wavelets for each component are reviewd. The paper concludes by discussing
the impact of wavelets on data mining research an ...

25 Sequentially encoded data structures that support bidirectional scanning   77%
Robert J. Lechner
**ACM SIGARCH Computer Architecture News , Proceedings of the 2nd annual
symposium on Computer architecture** December 1974
Volume 3 Issue 4

26 Access methods for text   77%
Chris Faloutsos
ACM Computing Surveys (CSUR) March 1985
Volume 17 Issue 1
This paper compares text retrieval methods intended for office systems. The operational
requirements of the office environment are discussed, and retrieval methods from database
systems and from information retrieval systems are examined. We classify these methods and
examine the most interesting representatives of each class. Attempts to speed up retrieval with
special purpose hardware are also presented, and issues such as approximate string matching
and compression are discussed. A quali ...

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   Journal of the ACM (JACM) April 1985
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2 **Order preserving string compression**
Antoshenkov, G.; Lomet, D.; Murray, J.;
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Order preserving string compression

Antoshenkov, G.   Lomet, D.   Murray, J.
Digital Equipment Corp., Maynard, MA;

This paper appears in: **Data Engineering, 1996. Proceedings of the Twel International Conference on**
Meeting Date: 02/26/1996 -03/01/1996
Publication Date: 26 Feb-1 Mar 1996
Location: New Orleans, LA , USA
On page(s): 655-663
References Cited: 11
INSPEC Accession Number: 5242668

Abstract:
Order-preserving compression can improve sorting and searching performanc and hence the performance of database systems. We describe a new parsing (tokenization) technique that can be applied to variable-length “keys”, producing substantial compression. It can both compre: decompress data, permitting variable lengths for dictionary entries and compressed forms. The key notion is to partition the space of strings into ran encoding the common prefix of each range. We illustrate our method with pa character compression for multi-field keys, demonstrating the dramatic gains possible. A specific version of the method has been implemented in Digital's I relational database system to enable effective multi-field compression

Index Terms:
data compression   encoding   relational databases   sorting   Digital Rdb relational datab system   compressed forms   data decompression   database systems performance   mu compression   multi-field keys   order-preserving string compression   padding character compression   parsing technique   range common prefix encoding   searching performan sorting performance   string-space partitioning   tokenization technique   variable-length dictionary entries · variable-length keys

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PORTAL

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Citation

Making a digital library: the contents of the CORE project

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↑ **ABSTRACT**

The CORE (Chemical Online Retrieval Experiment) project is a library of primary journal articles in chemistry. Any library has an inside and an outside; in this article we describe the inside of the library and the methods for building the system and accumulating the database. A later

article will describe the outside (user experiences). Among electronic-library projects, the CORE project is unusual in that it has both ASCII derived from typesetting and image data for all its pages, and among experimental electronic-library projects, it is unusually large. We describe here (a) the processes of scanning and analyzing about 400,000 pages of primary journal material, (b) the conversion of a similar amount of textual database material, (c) the linking of these two data sources, and (d) the indexing of the text material.

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↑ INDEX TERMS

Primary Classification:
  H. Information Systems
  ↳ H.3 INFORMATION STORAGE AND RETRIEVAL
      ↳ H.3.6 Library Automation
          ↳ Subjects: Large text archives

Additional Classification:
  H. Information Systems
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          ↳ Subjects: Interaction styles (e.g., commands, menus, forms, direct manipulation)

  I. Computing Methodologies
  ↳ I.4 IMAGE PROCESSING AND COMPUTER VISION

General Terms:
Algorithms, Design, Experimentation, Human Factors

Keywords:
image segmentation

↑ REVIEW

"Friedrich Gebhardt"

The goal of CORE is to study the problems of text retrieval with huge amounts of data (many gigabytes) including pictures. The data include several years of 20 journals published by the American Chemical Society (ACS). The text is available in the internal format used by the ACS; the pictures (almost entirely graphs) have to be identified in the printed journals or on films, scanned, and assigned to the proper places within the text. The paper explains the tasks of figure extraction and text acquisition in sufficient detail, giving examples. In addition, the SCEPTER user interface and the Newton search engine are sketched, again with illustrations. *Online Computing Reviews Service*

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- Schonfeld, D. Lelescu, D.
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This paper appears in: Systems Sciences, 1999. HICSS-32. Proceedings of the 32nd Annual Hawaii International Conference on
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Maui, HI, USA
1999
ISBN: 0-7695-0001-3
Number of Pages: liii+341
References Cited: 14
INSPEC Accession Number: 6182119

Abstract:
Multimedia data is generally stored in compressed form in order to efficiently utilize the available storage facilities. Access to archives is dependent on our ability to browse compressed multimedia information-retrieval and tracking from coded video databases. In this paper, a novel visual search engine for video retrieval and tracking from compressed multimedia databases is proposed. The goal of the project is the implementation of a visual browser that operates in a distributed environment where users initiate video searches and retrieve relevant video information simultaneously from multiple video archives. Being presented with a query in the form of template images of objects, the system operates on the compressed video to find the images or video sequences where those objects are present and their positions in the image. Upon user's request, the system will decompress and display only the video sequences of interest.

Index Terms:
video databases multimedia databases data compression video coding image retrieval search engines VORTEX video retrieval and tracking compressed multimedia visual search engine multimedia databases coded video databases video retrieval visual browser

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- Dvorsky, J. Pokorny, J. Snasel, V.
Editor(s): Storer, J.A., Cohn, M.
Dept. of Comput. Sci., Olomouc Palacky Univ., Czechoslovakia
This paper appears in: Data Compression Conference, 1999.
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On page(s): 523
29-31 March 1999
Snowbird, UT, USA
1999
ISBN: 0-7695-0096-X
IEEE Catalog Number: PR00096
Number of Pages: xv+566
References Cited: 3
INSPEC Accession Number: 6314316

Abstract:
Summary form only given. We present a new compression method,
called WLZW, which is a word-based modification of classic LZW. The
algorithm is two-phase, it uses only one table for words and non-words
(so called tokens), and a single data structure for the lexicon is usable
as a text index. The length of words and non-words is restricted. This
feature improves the compress ratio achieved. Tokens of unlimited
length alternate, when they are read from the input stream. Because of
restricted length of tokens alternating of tokens is corrupted, because
some tokens are divided into several parts of same type. To save
alternating of tokens two special tokens are created. They are empty
word and empty non-word. They contain no character. Empty word is
inserted between two non-words and empty non-word between two
words. Alternating of tokens is saved for all sequences of tokens. The
alternating of tokens is an important piece of information. With this
knowledge the kind of the next token can be predicted. One selected
(so-called victim) non-word can be deleted from input stream. An
algorithm to search the victim is also presented. In the decompression
phase, a deleted victim is recognized as an error in alternating of words
and non-words in sequence. The algorithm was tested on many texts in
different formats (ASCII, RTF). The Canterbury corpus, a large set, was
used as a standard for publication results. The compression ratio
achieved is fairly good, on average 25%-22%. Decompression is very
fast. Moreover, the algorithm enables evaluation of database queries in
given text. This supports the idea of leaving data in the compressed
state as long as possible, and to decompress it when it is necessary.

Index Terms:
data compression text analysis query processing data structures
sequences word-based compression large text documents WLZW
two-phase algorithm data structure lexicon text index token length
empty word empty non-word sequences search algorithm ASCII RTF

Canterbury corpus database queries

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